



INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(51) International Patent Classification ⁷ : C12N 15/37, 15/86, C07K 14/025, A61K 48/00	A3	(11) International Publication Number: WO 00/14244 (43) International Publication Date: 16 March 2000 (16.03.00)
(21) International Application Number: PCT/CA99/00807 (22) International Filing Date: 3 September 1999 (03.09.99) (30) Priority Data: 60/099,291 4 September 1998 (04.09.98) US (71) Applicant (for all designated States except US): CONNAUGHT LABORATORIES LIMITED [CA/CA]; 1755 Steeles Avenue, Toronto, Ontario M2R 3T4 (CA). (72) Inventors; and (75) Inventors/Applicants (for US only): GAJEWCZYK, Diane, M. [CA/CA]; 21 Crafton Avenue, Toronto, Ontario M6R 1C3 (CA). PERSSON, Roy [CA/CA]; Unit 604, 7 Bishop Avenue, North York, Ontario M2M 4J4 (CA). YAO, Fei-Long [CN/CA]; 81 Elsa Vineway, North York, Ontario M2J 4H8 (CA). CAO, Shi-Xian [CA/CA]; Apt. 408, 716 The West Mall, Etobicoke, Ontario M9C 4X6 (CA). KLEIN, Michel, H. [CA/CA]; 16 Munro Boulevard, Willowdale, Ontario M2P 1B9 (CA). TARTAGLIA, James [US/US]; 7 Christina Drive, Schenectady, NY 12303 (US). MOINGEON, Phillipe [FR/FR]; Chemin Saint Jean, F- Pommiers (FR). ROVIN-SKI, Benjamin [CA/CA]; 70 Winding Lane, Thornhill, Ontario L4J 5H6 (CA).		(74) Agent: STEWART, Michael, I.; Sim & McBurney, 6th floor, 330 University Avenue, Toronto, Ontario M5G 1R7 (CA). (81) Designated States: AE, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CR, CU, CZ, DE, DK, DM, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, UA, UG, US, UZ, VN, YU, ZA, ZW, ARIPO patent (GH, GM, KE, LS, MW, SD, SL, SZ, UG, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG). Published <i>With international search report.</i> (88) Date of publication of the international search report: 2 June 2000 (02.06.00)
(54) Title: TREATMENT OF CERVICAL CANCER (57) Abstract <p>Vectors for DNA immunization against cervical cancer comprise a nucleic acid molecule encoding at least one non-toxic T-cell epitope of the E6 and/or E7 antigens of a strain of human papilloma virus (HPV) associated with cervical cancer, such as HPV-16, and a promoter operatively coupled to the nucleic acid molecule for expression of the nucleic acid molecule in a host to which the vector is administered.</p>		

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INTERNATIONAL SEARCH REPORT

(PCT Article 18 and Rules 43 and 44)

Applicant's or agent's file reference 1038-981 MIS	FOR FURTHER ACTION see Notification of Transmittal of International Search Report (Form PCT/ISA/220) as well as, where applicable, Item 5 below.	
International application No. PCT/CA 99/ 00807	International filing date (day/month/year) 03/09/1999	(Earliest) Priority Date (day/month/year) 04/09/1998
Applicant CONNAUGHT LABORATORIES LIMITED et al.		

This International Search Report has been prepared by this International Searching Authority and is transmitted to the applicant according to Article 18. A copy is being transmitted to the International Bureau.

This International Search Report consists of a total of 4 sheets.

☒ It is also accompanied by a copy of each prior art document cited in this report.

1. Basis of the report

a. With regard to the language, the international search was carried out on the basis of the international application in the language in which it was filed, unless otherwise indicated under this item.

☐ the international search was carried out on the basis of a translation of the international application furnished to this Authority (Rule 23.1(b)).

b. With regard to any nucleotide and/or amino acid sequence disclosed in the international application, the international search was carried out on the basis of the sequence listing:

☐ contained in the international application in written form.

☐ filed together with the international application in computer readable form.

☒ furnished subsequently to this Authority in written form.

☒ furnished subsequently to this Authority in computer readable form.

☒ the statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.

☒ the statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished

2. ☒ Certain claims were found unsearchable (See Box I).

3. ☐ Unity of invention is lacking (see Box II).

4. With regard to the title,

☒ the text is approved as submitted by the applicant.

☐ the text has been established by this Authority to read as follows:

5. With regard to the abstract,

☒ the text is approved as submitted by the applicant.

☐ the text has been established, according to Rule 38.2(b), by this Authority as it appears in Box III. The applicant may, within one month from the date of mailing of this international search report, submit comments to this Authority.

6. The figure of the drawings to be published with the abstract is Figure No. _____

☐ as suggested by the applicant.

☐ because the applicant failed to suggest a figure.

☐ because this figure better characterizes the invention.

☐ None of the figures.

INTERNATIONAL SEARCH REPORT

International application No.

PCT/CA 99/ 00807

Box I Observations where certain claims were found unsearchable (Continuation of Item 1 of first sheet)

This International Search Report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☒ Claims Nos.:
because they relate to subject matter not required to be searched by this Authority, namely:
Remark: Although claims 12 and 13
are directed to a method of treatment of the human/animal
body, the search has been carried out and based on the alleged
effects of the compound/composition.
2. ☐ Claims Nos.:
because they relate to parts of the International Application that do not comply with the prescribed requirements to such
an extent that no meaningful International Search can be carried out, specifically:
3. ☐ Claims Nos.:
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

Box II Observations where unity of invention is lacking (Continuation of Item 2 of first sheet)

This International Searching Authority found multiple inventions in this International application, as follows:

1. ☐ As all required additional search fees were timely paid by the applicant, this International Search Report covers all
searchable claims.
2. ☐ As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment
of any additional fee.
3. ☐ As only some of the required additional search fees were timely paid by the applicant, this International Search Report
covers only those claims for which fees were paid, specifically claims Nos.:
4. ☐ No required additional search fees were timely paid by the applicant. Consequently, this International Search Report is
restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

Remark on Protest

- ☐ The additional search fees were accompanied by the applicant's protest.
- ☐ No protest accompanied the payment of additional search fees.

INTERNATIONAL SEARCH REPORT

International Application No

PCT/CA 99/00807

A. CLASSIFICATION OF SUBJECT MATTER

IPC 7 C12N15/37 C12N15/86 C07K14/025 A61K48/00

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 7 C12N C07K A61K

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	RESSING M. E. ET AL.: "HUMAN CTL EPITOPES ENCODED BY HUMAN PAPILLOMAVIRUS TYPE 16 E6 AND E7 IDENTIFIED THROUGH IN VIVO AND IN VITRO IMMUNOGENICITY STUDIES OF HLA-A*0201-BINDING PEPTIDES" JOURNAL OF IMMUNOLOGY, vol. 154, 1 June 1995 (1995-06-01), pages 5934-5943, XP002915422 ISSN: 0022-1767 cited in the application the whole document	1-13
Y	WO 96 00583 A (MERCK & CO INC ;DONNELLY JOHN J (US); LIU MARGARET A (US); MARTINE) 11 January 1996 (1996-01-11) the whole document	1-13

☒ Further documents are listed in the continuation of box C.

☒ Patent family members are listed in annex.

* Special categories of cited documents :

"A" document defining the general state of the art which is not considered to be of particular relevance

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"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.

"&" document member of the same patent family

Date of the actual completion of the international search

25 February 2000

Date of mailing of the international search report

09/03/2000

Name and mailing address of the ISA

European Patent Office, P.B. 5818 Patentlaan 2
NL - 2280 HV Rijswijk
Tel. (+31-70) 340-2040, Tx. 31 651 epo nl,
Fax: (+31-70) 340-3016

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International Application No

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C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category °	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y ✓	WO 92 16636 A (IMMUNOLOGY LTD) 1 October 1992 (1992-10-01) page 2, line 10 - line 15 page 4, line 19 -page 7, line 9 page 9, line 8 - line 18 page 12, line 12 - line 18 page 25, line 28 -page 26, line 14 ---	7-10
A ✓	SUNDARAM P. ET AL.: "Intracutaneous vaccination of rabbits with the E6 gene of cottontail rabbit papillomavirus provides partial protection against virus challenge. " VACCINE, vol. 16, no. 6, April 1998 (1998-04), pages 613-623, XP002131646 the whole document ---	1-13
A ✓	MUENGER K. ET AL.: "COMPLEX FORMATION OF HUMAN PAPILLOMAVIRUS E7 PROTEINS WITH THE RETINOBLASTOMA TUMOR SUPPRESSOR GENE PRODUCT" EMBO JOURNAL, vol. 8, no. 13, 20 December 1989 (1989-12-20), pages 4099-4105, XP000611714 ISSN: 0261-4189 the whole document ---	1-13
A ✓	WO 97 05164 A (CSL LTD ;UNIV QUEENSLAND (AU); WEBB ELIZABETH ANN (AU); MARGETTS M) 13 February 1997 (1997-02-13) the whole document ---	7-10
P,X ✓	WO 99 18995 A (HEDLEY MARY LYNNE ;PANGAEA PHARMACEUTICALS INC (US); CHICZ ROMAN M) 22 April 1999 (1999-04-22) the whole document -----	1-6, 11-13

INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

PCT/CA 99/00807

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